Volume 31 1972

FEBS

European Journal of Biochemistry

Honorary Chairman of the Editorial Board: Sir Hans Krebs (Oxford)

Editor-in-Chief: Claude Liébecq (Liège)

Editorial Board: J. Berthet (Louvain), A. E. Braunstein (Moskva), F. Chapeville (Paris), P. Fasella (Roma), F. Franěk (Praha), O. Hoffmann-Ostenhof (Wien), H. Holzer (Freiburg i. Br.), L. Jaenicke (Köln), A. T. James (Sharnbrook), E. Katchalski (Rehovot), T. Keleti (Budapest), M. Klingenberg (München), M. Lazdunski (Marseille), C. Liébecq (Liège), B. P. Lisboa (Hamburg), S. M. Rapoport (Berlin), P. Reichard (Stockholm), D. B. Roodyn (London), D. Shugar (Warszawa), A.-M. Staub (Paris), K. Wallenfels (Freiburg i. Br.), J.-P. Waller (Gif-sur-Yvette).

Advisory Board: J. Asselineau (Toulouse), M. Avron (Rehovot), G. F. Azzone (Padova), C. Baglioni (Roma), G. Bernardi (Paris), W. Bernhard (Villejuif), G. S. Boyd (Edinburgh), R. Braun (Bern), M. S. Bretscher (Cambridge), D. Cavallini (Roma), K. Dalziel (Oxford), R. M. C. Dawson (Babraham), W. C. Fiers (Gent), E. Fredericq (Liège), P. B. Garland (Dundee), G. P. Georgiev (Moskva), T. W. Goodwin (Liverpool), J. I. Harris (Cambridge), H. G. Hers (Louvain), J. J. Higgins (Philadelphia), R. Jaenicke (Regensburg), A. Kepes (Paris), K. Kirschner (Basel), H. Klostermeyer (Kiel), A. Klug (Cambridge), W. Klyne (London), L. Kováč (Pezinok), U. Z. Littauer (Rehovot), V. Luzzati (Gif-sur-Yvette), F. Lynen (Martinsried bei München), C. Milstein (Cambridge), P. Mitchell (Bodmin), S. Orrenius (Stockholm), P. Overath (Köln), D. W. G. Pette (Konstanz), J. Polonsky (Gif-sur-Yvette), J. G. Reich (Berlin), M. Revel (Rehovot), A. Schellenberger (Halle/Saale), M. Schramm (Jerusalem), M. Sela (Rehovot), G. Semenza (Zürich), A. Sols (Madrid), L.-V. von Stedingk (Stockholm), J. R. Tata (London), R. Tsanev (Sofiya), C. A. Vernon (London), W. J. Whelan (Miami), J.-M. Wiame (Bruxelles), O. Wieland (München), M. Wiewiorowski (Poznan), D. H. Williamson (Oxford), G. T. Young (Oxford), H. G. Zachau (München).

Special Advisor to the Editor-in-Chief: H. Mayer-Kaupp (Heidelberg)

Published by Springer-Verlag Berlin Heidelberg New York
on behalf of the Federation of European Biochemical Societies

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is vested in the Federation of European Biochemical Societies.

The use in this journal of registered or trade names, trademarks etc. without special acknowledgement does not imply that such names, as defined by the relevant protection laws, may be regarded as unprotected and thus free for general use.

Springer Verlag · Berlin · Heidelberg · New York

Printers: Wiesbadener Graphische Betriebe GmbH, Wiesbaden

Printed in Germany

Copyright © by the Federation of European Biochemical Societies 1972

Volume 31 1972

Table of Contents

592 Corrections

Nucleic Acids and Protein Synthesis — Biochemical Genetics — Morphogenesis

38 W. G. Lanyon, J. Paul, and R. Williamson: Studies on the Heterogeneity of Mouse-Globin Messenger RNA

44 R. Kamen, M. Kondo, W. Römer, and C. Weissmann: Reconstitution of Qβ Replicase Lacking Subunit α with Protein-Synthesis-Interference Factor I

103 P. Bannon and W. Verly: Alkylation of Phosphates and Stability of Phosphate Triesters in DNA

112 G. N. Dessev and K. Grancharov: Studies on Rat-Liver Ribosomes, Ribosomal Subparticles and RNA Fixed with Formaldehyde

119 M. E. Haines, R. G. Wickremasinghe, and I. R. Johnston: Purification and Partial Characterization of Rat-Liver Nuclear DNA Polymerase

130 R. S. Brown, B. F. C. Clark, R. R. Coulson, J. T. Finch, A. Klug, and D. Rhodes: Crystallization of Pure Species of Bacterial tRNA for X-Ray Diffraction Studies

148 D. Kern, R. Giegé, and J.-P. Ebel: Incorrect Aminoacylations Catalysed by the Phenylalanyl- and Valyl-tRNA Synthetases from Yeast

194 G. Spohr, B. Kayibanda, and K. Scherrer: Polyribosome-Bound and Free-Cytoplasmic-Hemoglobin-Messenger RNA in Differentiating Avian Erythroblasts

215 W. Freist, A. Maelicke, M. Sprinzl, and F. Cramer: Incorporation of 3-Methyl-2-Benzothiazolone Hydrazone into the Anticodon Loop of $tRNA^{Phe}$ from Yeast

226 N. Kislev and J. M. Eisenstadt: Protein Synthesis in Mitochondria of *Euglena gracilis*

246 U. Lindberg and T. Persson: Isolation of mRNA from KB-Cells by Affinity Chromatography on Polyuridylic Acid Covalently Linked to Sepharose

329 M. Ikehara, M. Hattori, and T. Fukui: Synthesis and Properties of Poly(2-Methyladenylic Acid). Formation of a Poly(A) · Poly(U) Complex with Hoogsteen-Type Hydrogen Bonding

335 J. Bonnet and J.-P. Ebel: Interpretation of Incomplete Reactions in tRNA Aminoacylation. Aminoacylation of Yeast $tRNA_{II}^{Val}$ with Yeast Valyl-tRNA Synthetase

360 G. G. Peters and R. S. Hayward: Extension of RNA Molecules with DNA. An Approach to the Study of Termination Sequences Recognised by RNA Polymerase

367 A. Talavera, M. Salas, and E. Viñuela: Temperature-Sensitive Mutants Affected in DNA Synthesis in Phage φ29 of *Bacillus subtilis*

394 J.-P. Dausse, A. Sentenac, and P. Fromageot: Interaction of RNA Polymerase from *Escherichia coli* with DNA. Influence of DNA Scissions on RNA-Polymerase Binding and Chain Initiation

438 A. R. Lehmann: Post-Replication Repair of DNA in Ultraviolet-Irradiated Mammalian Cells. No Gaps in DNA Synthesized Late after Ultraviolet Irradiation

518 W. E. G. Müller, Z. Yamazaki, H.-J. Breter, and R. K. Zahn: Action of Bleomycin on DNA and RNA

561 J. Delaunay, C. Mathieu, and G. Schapira: Eukaryotic Ribosomal Proteins. Interspecific and Intraspecific Comparisons by Two-Dimensional Polyacrylamide-Gel Electrophoresis

Protein Chemistry — Enzymology — Physical Chemistry

1 W. Guschlbauer, I. Frič, and A. Holý: Oligonucleotide Conformations. Optical Studies on GpU Analogues with Modified-Uridine Residues

14 J. Ricard, G. Noat, C. Got, and M. Borel: The Theory of Alternative Substrates in Enzyme Kinetics and Its Application to Yeast Hexokinase

25 G. Feinstein and A. Gertler: The Effect of Limited Proteolysis of Chicken Ovoinhibitor by Bovine Chymotrypsin on the Inhibitory Activities against Trypsin, Chymotrypsin and Elastase

32 O. G. Hampe: Conformation of Lysozyme in Aqueous Solution. Effect of Ionic Strength and Protein Concentration

52 G. Amiconi, E. Antonini, M. Brunori, H. Formaneck, and R. Huber: Functional Properties of Native and Reconstituted Hemoglobins from *Chironomus thummi thummi*

63 J. J. Phelan, J. A. Subirana, and R. D. Cole: An Unusual Group of Lysine-Rich Histones from Gonads of a Sea Cucumber, *Holothuria tubulosa*

95 C. Bjurulf and I. Wadsö: Thermochemistry of Lysozyme-Inhibitor Binding

135 R. A. John and N. Tudball: Evidence for Induced Fit of a Pseudo-Substrate of Aspartate Aminotransferase

139 M. Foucher, J. Verdière, F. Lederer, and P. P. Slonimski: On the Presence of a Non-Trimethylated iso-1 Cytochrome c in a Wild-Type Strain of *Saccharomyces cerevisiae*

144 F. Lederer: *Candida krusei* Cytochrome c: a Correction to the Sequence. Glutamine-16, an Invariant Residue in Mitochondrial Cytochrome *c*?

166 J. A. Shafer, E. Chiancone, L. M. Vittorelli, C. Spagnuolo, B. Mackler, and E. Antonini: Binding of Reduced Cofactor to Glutamate Dehydrogenase

180 D. C. Hohnadel and C. Cooper: The Effect of Structural Modifications of ATP on the Yeast-Hexokinase Reaction

234 E. Breitmaier and W. Voelter: A ^{13}C Nuclear-Magnetic-Resonance Study of the Enzyme Cofactor Flavin- Adenine Dinucleotide

239 B. Teuwissen, P. L. Masson, P. Osinski, and J. F. Heremans: Metal-Combining Properties of Human Lactoferrin. The Possible Involvement of Tyrosyl Residues in the Binding Sites. Spectrophotometric Titration

255 J.-L. Jacob et J. d'Auzac: La glycéraldehyde-3-phosphate déshydrogénase du latex d'*Hevea brasiliensis*. Comparaison avec son homologue phosphorylante

290 D. Haas, V. Kurer, and T. Leisinger: *N*-Acetylglutamate Synthetase of *Pseudomonas aeruginosa*. An Assay *in vitro* and Feedback Inhibition by Arginine

296 Z. Vodrážka, Z. Hrkal, M. B. Kodíček, and D. Jandová: Comparison of the Conformation of Mammalian Globins in Solution

315 M. Robert-Gero and J.-P. Waller: Purification of Methionyl-tRNA Synthetase from *Escherichia coli* K12 by Affinity Chromatography

386 P. Halleux, C. Legrain, V. Stalon, A. Piérard, and J.-M. Wiame: Regulation of the Catabolic Ornithine Carbamoyltransferase of *Pseudomonas fluorescens*. A Study of the Quaternary Structure

423 O. Brenner-Holzach and F. Leuthardt: Hybridisation of Aldolase from *Drosophila*, Blocked at the Active Site, with Native C Aldolase from Calf Brain

427 K. Lerch and L. Ettlinger: Purification and Characterization of a Tyrosinase from *Streptomyces glaucescens*

464 P. Geynet, J. Gallay, and A. Alfsen: Mammalian 3-Oxosteroid Δ^5—Δ^4-Isomerase. Solubilization by Calcium Ions and Kinetic Characteristics Toward C_{19} and C_{21} Steroids

470 D. E. Massey and D. G. Smyth: The Effect of Acylation on the Molecular Size of Insulin

474 E. M. Bradbury, H. V. Molgaard, L. M. Stephens, L. A. Bolund, and E. W. Johns: X-Ray Studies of Nucleoproteins Depleted of Lysine-Rich Histone

505 W. B. Gratzer, J. M. Creeth, and G. H. Beaven: Presence of Trimers in Glucagon Solution

510 A. K. Paterson and J. R. Knowles: The Number of Catalytically Essential Carboxyl Groups in Pepsin. Modification of the Enzyme by Trimethyloxonium Fluoroborate

554 D. Wynne and Y. Shalitin: Effects of Alcohols on Hydrolysis Catalyzed by Beef-Liver Esterase

565 S. Yamashita and S. Numa: Partial Purification and Properties of Glycerophosphate Acyltransferase from Rat Liver. Formation of 1-Acylglycerol 3-Phosphate from *sn*-Glycerol 3-Phosphate and Palmityl Coenzyme A

574 T. Pacuszka and J. Kościelak: The Biosynthesis of Blood-Group-B Character on Human O-Erythrocytes by a Soluble α-Galactosyltransferase from Milk

578 E. Trittelvitz, H. Sick, and K. Gersonde: Conformational Isomers of Nitrosyl-haemoglobin. An Electron-Spin-Resonance Study

585 G. G. Gross: Formation and Reduction of Intermediate Acyladenylate by Aryl-Aldehyde. NADP Oxidoreductase from *Neurospora crassa*

Cellular Biochemistry and Metabolism

59 C. M. Veneziale: Regulation of D-Triokinase and NAD-Linked Glycerol-Dehydrogenase Activities in Rat Liver

69 W. G. Guder and O. H. Wieland: Metabolism of Isolated Kidney Tubules. Additive Effects of Parathyroid Hormone and Free Fatty Acids on Renal Gluconeogenesis

80 J. P. Vandecasteele and M. Hermann: Regulation of a Catabolic Pathway. Lysine Degradation in *Pseudomonas putida*

86 L. Do Khac, D. Eboué-Bonis, A.-M. Chambaut, and H. Clauser: The Use of Glucosamine as a Metabolic Probe in the Rat Diaphragm. The Effect of Insulin on Its Metabolic Fate

156 T. de Barsy, P. Jacquemin, P. Devos, and H.-G. Hers: Rodent and Human Acid α-Glucosidase. Purification, Properties and Inhibition by Antibodies. Investigation in Type II Glycogenosis

172 M. Rohmer, G. Ourisson, and R. D. Brandt: Hydrosoluble Complexes of Sterols, Sterol Esters and Their Precursors from *Zea mays* L.

186 F. Clemente, A. de Caro et C. Figarella: Composition du suc pancréatique humain. Étude immunoenzymologique

209 F. Gabrielli and S. Baldi: Effects of Calcium Ions on Pyruvate Kinase in Pigeon Liver

266 K. D. Hepp: Adenylate Cyclase and Insulin Action. Effect of Insulin, Nonsuppressible Insulin-Like Material, and Diabetes on Adenylate-Cyclase Activity in Mouse Liver

300 Z. Aleksandrowicz, J. Świerczyński, and L. Żelewski: Effect of Progesterone on Respiration and Oxidative Phosphorylation

308 R. Portenhauser and O. Wieland: Regulation of Pyruvate Dehydrogenase in Mitochondria of Rat Liver

345 K. Einarsson, J.-Å. Gustafsson, and A. S. Goldman: Metabolism of Steroid Hormones, Sterols, and Bile Acids in Liver Microsomes from Male, Female, and Male-Pseudohermaphroditic Rats

372 B. Y. Tang and I. A. Hansen: Lipogenesis in Chicken Uropygial Glands

378 B. P. Lisboa and J.-C. Plasse: Studies on the Metabolism of Steroids in the Foetus. Metabolism of 4-Androstene-3,17-Dione by Human Foetal-Liver Microsomes

446 R. W. Parish: The Intracellular Location of Phenol Oxidases, Peroxidase and Phosphatases in the Leaves of Spinach Beet *(Beta vulgaris* L. Subspecies *vulgaris)*

483 J.-C. Marchand, J.-P. Leroux, and P. Cartier: The Energy Metabolism of Human-Blood Polymorphonuclear Cells. Action of Various Effectors, Except Hormones

496 J. Rydström: Site-Specific Inhibitors of Mitochondrial Nicotinamide-Nucleotide Transhydrogenase

526 D. G. Nicholls, H. J. Grav, and O. Lindberg: Mitochondria from Hamster Brown-Adipose Tissue. Regulation of Respiration *in vitro* by Variations in Volume of the Matrix Compartment

Natural Products

221 H. van der Wel and K. Loeve: Isolation and Characterization of Thaumatin I and II, the Sweet-Tasting Proteins from *Thaumatococcus daniellii* Benth

230 C. Galanos, E. T. Rietschel, O. Lüderitz, O. Westphal, Y. B. Kim, and D. W. Watson: Biological Activities of Lipid A Complexed with Bovine-Serum Albumin

320 K. Reske and K. Jann: The O8 Antigen of *Escherichia coli*. Structure of the Polysaccharide Chain

456 H.-D. Heilmann: On the Peptidoglycan of the Cell Walls of *Pseudomonas aeruginosa*

Immunochemistry

277 J. Novotný, L. Dolejš, and F. Franěk: Uniformity and Species-Specific Features of the N-Terminal Amino-Acid Sequence of Porcine Immunoglobulin λ-Chains

354 P. Querinjean, H. Bazin, A. Beckers, C. Deckers, J. F. Heremans, and C. Milstein: Transplantable Immunoglobulin-Secreting Tumours in Rats. Purification and Chemical Characterization of Four Kappa Chains from LOU/Wsl Rats

405 J. Svasti and C. Milstein: The Parallel Nature of the Interchain Disulphide Bonds of Immunoglobulins. Studies on a Mouse IgG1 Myeloma Protein

534 B. Bonavida, S. Fuchs, M. Sela, P. W. Roddy, and H. A. Sober: Specific Antibodies to Dinucleotides and Trinucleotides

541 M. Bustin, Z. Eshhar, and M. Sela: Characterization and Partial Purification of Antigenic Components Solubilized by a Reversible Chemical Modification from Rat-Thymocyte Membrane

Indexed in Current Contents

Author-Index

Aleksandrovicz, Z. 300
Alfsen, A. 464
Amiconi, G. 52
Antonini, E. 52, 166

Baldi, S. 209
Bannon, P. 103
Bazin, H. 354
Beaven, G. H. 505
Beckers, A. 354
Bjurulf, C. 95
Bolund, L. A. 474
Bonavida, B. 534
Bonnet, J. 335
Borel, M. 14
Bradbury, E. M. 474
Brandt, R. D. 172
Breitmaier, E. 234
Brenner-Holzach, O. 423
Breter, H.-J. 518
Brown, R. S. 130
Brunori, M. 52
Bustin, M. 541

Chambaut, A.-M. 86
Cartier, P. 483
Chiancone, E. 166
Clark, B. F. C. 130
Clauser, H. 86
Clemente, F. 186
Cole, R. D. 63
Cooper, C. 180
Coulson, R. R. 130
Cramer, F. 215
Creeth, J. M. 505

Dausse, J.-P. 394
D'Auzac, J. 255
De Barsy, T. 156
De Caro, A. 186
Deckers, C. 354
Delaunay, J. 561
Dessev, G. N. 112
Devos, P. 156
Do Khac, L. 86
Dolejš, L. 277

Ebel, J.-P. 148, 335
Eboué-Bonis, D. 86
Einarsson, K. 345
Eisenstadt, J. M. 226
Eshhar, Z. 541
Ettlinger, L. 427

Feinstein, G. 25
Figarella, C. 186
Finch, J.-T. 130
Formaneck, H. 52
Foucher, M. 139
Franěk, F. 277
Freist, W. 215
Frič, I. 1
Fromageot, P. 394
Fuchs, S. 534
Fukui, T. 329

Gabrielli, F. 209
Galanos, C. 230
Gallay, J. 464
Gersonde, K. 578
Gertler, A. 25
Geynet, P. 464
Giegé, R. 148
Goldmann, A. S. 345
Got, C. 14
Grancharov, K. 112
Gratzer, W. B. 505
Grav, H. J. 526
Gross, G. G. 585
Guder, W. G. 69
Guschlbauer, W. 1
Gustafsson, J.-Å. 345

Haas, D. 290
Haines, M. E. 119
Halleux, P. 386
Hampe, O. G. 32
Hansen, I. A. 372
Hattori, M. 329
Hayward, R. S. 360
Hepp, K. D. 266
Heilmann, H.-D. 456
Heremans, J. F. 239, 354
Hermann, M. 80
Hers, H.-G. 156
Hohnadel, D. C. 180
Holý, A. 1
Hrkal, Z. 296
Huber, R. 52

Ikehara, M. 329

Jacob, J.-L. 255
Jacquemin, P. 156
Jandová, D. 296
Jann, K. 230
John, R. A. 135
Johns, E. W. 474
Johnston, I. R. 119

Kamen, R. 44
Kayibanda, B. 194
Kern, D. 148

Kim, Y. B. 230
Kislev, N. 226
Klug, A. 130
Knowles, J. R. 510
Kodiček, M. B. 296
Kondo, M. 44
Kościelak, J. 574
Kurer, V. 290

Lanyon, W. G. 38
Lederer, F. 139, 144
Legrain, C. 386
Lehmann, A. R. 438
Leisinger, T. 290
Lerch, K. 427
Leroux, J.-P. 483
Leuthardt, F. 423
Lindberg, O. 526
Lindberg, U. 246
Lisboa, B. P. 378
Loeve, K. 221
Lüderitz, O. 230

Mackler, B. 166
Maelicke, A. 215
Marchand, J.-C. 483
Massey, D. E. 470
Masson, P. L. 239
Mathieu, C. 561
Milstein, C. 354, 405
Molgaard, H. V. 474
Müller, W. E. G. 518

Nicholls, D. G. 526
Noat, G. 14
Novotný, J. 277
Numa, S. 565

Osinski, P. 239
Ourisson, G. 172

Pacuszka, T. 574
Parish, R. W. 446
Paterson, A. K. 510
Paul, J. 38
Persson, T. 246
Peters, G. G. 360
Phelan, J. J. 63
Piérard, A. 386
Plasse, J.-C. 378
Portenhauser, R. 308

Querinjean, P. 354

Reske, K. 320
Rhodes, D. 130
Ricard, J. 14
Rietschel, E. T. 230
Robert-Gero, M. 315
Roddy, P. W. 534
Römer, W. 44
Rohmer, M. 172
Rydström, J. 496

Salas, M. 367
Schapira, G. 561
Scherrer, K. 194
Sela, M. 534, 541
Sentenac, A. 394
Shafer, J. A. 166
Shalitin, Y. 554
Sick, H. 578
Slonimski, P. P. 139
Smyth, D. G. 470
Sober, H. A. 534
Spagnuolo, C. 166
Spohr, G. 194
Sprinzl, M. 215
Stalon, V. 386
Stephens, R. M. 474
Subirana, J. A. 63
Svasti, J. 405
Świerczyński, J. 300

Talavera, A. 367
Tang, B. Y. 372
Teuwissen, B. 239
Trittelvitz, E. 578
Tudball, N. 135

Vandecasteele, J. P. 80
Van der Wel, H. 221
Veneziale, C. M. 59
Verdière, J. 139
Verly, W. 103
Vittorelli, L. M. 166
Vodrážka, Z. 296
Voelter, W. 234
Viñuela, E. 367

Wadsö, I. 95
Waller, J.-P. 315
Watson, D. W. 230
Weissmann, C. 44
Westphal, O. 230
Wiame, J.-M. 386
Wickremasinghe, R. G. 119
Wieland, O. H. 69, 308
Williamson, R. 38
Wynne, D. 554

Yamashita, S. 565
Yamazaki, Z. 518

Zahn, R. K. 518
Zelewski, L. 300